

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An apparatus ~~A system for performing device detection and service discovery in a mobile ad hoc communications network~~, comprising:

a memory device; and

a processor disposed in communication with the memory device, the processor configured to:

conduct an inquiry ~~of the mobile ad hoc communications network~~ to discover at

least one nearby device, ~~the inquiry including an indication that said at least one nearby device may include a middleware layer, said middleware layer being middleware software for providing application and service discovery;~~

when the an inquiry result includes ~~the an~~ indication that said at least one nearby device may include ~~the a~~ middleware layer, the middleware layer comprising a middleware software for providing application and service discovery :

create a wireless short-range connection to said at least one nearby device;

confirm whether said at least one nearby device includes the middleware

layer by requesting corresponding information from said at least one nearby device via the wireless short-range connection; and

when said at least one nearby device includes the middleware layer:

execute the middleware layer to perform application and service discovery.

2. (Currently Amended) The Apparatus ~~system~~ of claim 1, wherein the middleware layer includes a service discovery protocol and at least one computer program, each computer program

comprising at least one sequence of operational instructions.

3. (Currently Amended) The Apparatus system of claim 1, wherein when said at least one nearby device includes the middleware layer, the processor is further configured to:

execute the middleware layer to launch applications and services.

4. (Currently Amended) The Apparatus system of claim 1, wherein to conduct the inquiry, the processor is further configured to:

send an inquiry request message to a coverage area within the mobile ad hoc communications network;

receive an inquiry response message from said at least one nearby device, the inquiry response message including the indication.

5. (Currently Amended) The Apparatus system of claim 4, wherein the inquiry request message is a Bluetooth inquiry command, and the inquiry response message is a Bluetooth inquiry result command.

6. (Currently Amended) The Apparatus system of claim 5, wherein setting at least one bit in the Bluetooth inquiry result command to at least one predetermined value is the indication.

7. (Currently Amended) The Apparatus system of claim 6, wherein said at least one bit includes at least one of the ad hoc networking aware bit, the location information bit, or the telephony capable bit.

8. (Currently Amended) The Apparatus system of claim 5, wherein setting at least two bits in the Bluetooth inquiry result command to at least one predetermined value is the indication.

9. (Currently Amended) The Apparatus system of claim 8, wherein said at least two bits includes at least two of the ad hoc networking aware bit, the location information bit, or the telephony capable bit.

10. (Currently Amended) The Apparatus ~~system~~ of claim 8, wherein said at least two bits includes the ad hoc networking aware bit, and at least one of the location information bit, or the telephony capable bit.

11. (Currently Amended) The Apparatus ~~system~~ of claim 1, wherein to create the connection, the processor is further configured to:

send a paging request message to a coverage area within the mobile as hoc
~~communications network~~ directed to said at least one nearby device; and
receive a paging accept message from said at least one nearby device.

12. (Currently Amended) The Apparatus ~~system~~ of claim 1, wherein to confirm that said at least one nearby device includes the middleware layer, the processor is further configured to:

send a recognition request message to said at least one nearby device; and
receive a recognition response message from said at least one nearby device.

13. (Currently Amended) The Apparatus ~~system~~ of claim 12, wherein receipt of the recognition response message confirms that said at least one nearby device includes the middleware layer.

14. (Currently Amended) The Apparatus ~~system~~ of claim 12, wherein the recognition response message includes a confirmation that said at least one nearby device includes the middleware layer.

15. (Currently Amended) The Apparatus ~~system~~ of claim 14, wherein setting at least one bit in the recognition response message to at least one predetermined value is the confirmation.

16. (Currently Amended) The Apparatus ~~system~~ of claim 12, wherein the recognition request message is a Bluetooth Service Discovery Protocol request and the recognition response message is a Bluetooth Service Discovery Protocol response.

17. (Currently Amended) The Apparatus system of claim 1, wherein to execute the middleware layer to perform application and service discovery, the processor is further configured to:

receive a notification message from said at least one nearby device, the notification message including a local application directory stored in said at least one nearby device;

store an update to a combined application directory, the update based on a comparison of the local application directory and the combined application directory; and

send an update message to said at least one nearby device, the update message including an update portion of the combined application directory for updating the local application directory stored in said at least one nearby device.

18. (Currently Amended) The Apparatus system of claim 17, wherein the processor is further configured to:

launch a local application based on a reference in the combined application directory; and

connect the local application to a counterpart application executing on said at least one nearby device.

19. (Currently Amended) A method for performing device detection and service discovery in a mobile ad hoc communications network, comprising:

conducting an inquiry ~~of the mobile ad hoc communications network~~ to discover at least one nearby device, ~~the inquiry including an indication that said at least one nearby device may include a middleware layer, said middleware layer being middleware software for providing application and service discover in an ad hoc network;~~

when ~~the~~ an inquiry request result includes ~~the~~ an indication that said at least one nearby device may include ~~the~~ a middleware layer, the middleware layer comprising a middleware software for providing application and service discovery :

creating a wireless short-range connection to said at least one nearby device;
confirming whether said at least one nearby device includes the middleware layer by
requesting corresponding information from said at least one nearby device
via the wireless short-range connection ;
and
when said at least one nearby device includes the middleware layer:
executing the middleware layer to perform application and service discovery.

20. (Original) The method of claim 19, wherein the middleware layer includes a service discovery protocol and at least one computer program, each computer program comprising at least one sequence of operational instructions.

21. (Original) The method of claim 19, wherein when said at least one nearby device includes the middleware layer, the method further comprises:
executing the middleware layer to launch applications and services.

22. (Currently Amended) The method of claim 19, wherein the conducting of the inquiry further comprises:
sending an inquiry request message ~~to a coverage area within the mobile ad hoc communications network~~; and
receiving an inquiry response message from said at least one nearby device, the inquiry response message including the indication.

23. (Original) The method of claim 22, wherein the inquiry request message is a Bluetooth inquiry command, and the inquiry response message is a Bluetooth inquiry result command.

24. (Original) The method of claim 23, wherein setting at least one bit in the Bluetooth inquiry result command to at least one predetermined value is the indication.

25. (Original) The method of claim 24, wherein said at least one bit includes at least one of the ad

hoc networking aware bit, the location information bit, or the telephony capable bit.

26. (Original) The method of claim 23, wherein setting at least two bits in the Bluetooth inquiry result command to at least one predetermined value is the indication.

27. (Original) The method of claim 26, wherein said at least two bits includes at least two of the ad hoc networking aware bit, the location information bit, or the telephony capable bit.

28. (Original) The method of claim 26, wherein said at least two bits includes the ad hoc networking aware bit, and at least one of the location information bit, or the telephony capable bit.

29. (Currently Amended) The method of claim 19, wherein the creating of the wireless short-range connection further comprises:

sending a paging request message to ~~a coverage area within the mobile ad hoc communications network directed~~ to said at least one nearby device; and
receiving a paging accept message from said at least one nearby device.

30. (Original) The method of claim 19, wherein the confirming further comprises:
sending a recognition request message to said at least one nearby device; and
receiving a recognition response message from said at least one nearby device,

31. (Original) The method of claim 30, wherein the receiving of the recognition response message confirms that said at least one nearby device includes the middleware layer.

32. (Original) The method of claim 30, wherein the recognition response message includes a confirmation that said at least one nearby device includes the middleware layer.

33. (Original) The method of claim 32, wherein setting at least one bit in the recognition response message to at least one predetermined value is the confirmation.

34. (Original) The method of claim 30, wherein the recognition request message is a Bluetooth Service Discovery Protocol request and the recognition response message is a Bluetooth Service Discovery Protocol response.

35. (Original) The method of claim 19, wherein the executing of the middleware layer to perform application and service discovery further comprises:

- receiving a notification message from said at least one nearby device, the notification message including a local application directory stored in said at least one nearby device;
- storing an update to a combined application directory, the update based on a comparison of the local application directory and the combined application directory; and
- sending an update message to said at least one nearby device, the update message including an update portion of the combined application directory for updating the local application directory stored in said at least one nearby device.

36. (Original) The method of claim 35, further comprising:

- launching a local application based on a reference in the combined application directory; and
- connecting the local application to a counterpart application executing on said at least one nearby device.

37. (Currently Amended) A computer program product, executable in a computer system for ~~performing device detection and service discovery in a mobile ad hoc communications network~~, comprising:

- a computer readable medium storing:
 - program code for conducting an inquiry ~~of the mobile ad hoc communications network~~ to discover at least one nearby device, ~~an inquiry request including an indication that said at least one nearby device may include a middleware layer, said middleware layer being middleware software for providing~~

~~application and service discovery;~~

program code for creating a connection to said at least one nearby device when ~~the~~
an inquiry result includes ~~the~~ an indication that said at least one nearby
device may include ~~the~~ a middleware layer, the middleware layer comprising
a middleware software for providing application and service discovery :

program code for confirming whether said at least one nearby device includes the
middleware layer by requesting corresponding information from said at least
one nearby device via the wireless short-range connection when the inquiry
includes the indication that said at least one nearby device may include the
middleware layer; and

program code for executing the middleware layer to perform application and service
discovery when said at least one nearby device includes the middleware
layer.

38. (Original) The computer program product of claim 37, wherein the middleware layer includes
a service discovery protocol and at least one computer program, each computer program comprising
at least one sequence of operational instructions.

39. (Original) The computer program product of claim 37, the computer readable medium further
storing:

program code for executing the middleware layer to launch applications and services
when said at least one nearby device includes the middleware layer.

40. (Currently Amended) The computer program product of claim 37, wherein the program
code for conducting the inquiry further comprises:

program code for sending an inquiry request message ~~to a coverage area within the~~
~~mobile ad hoc communications network;~~ and

program code for receiving an inquiry response message from said at least one
nearby device, the inquiry response message including the indication.

41. (Currently Amended) The computer program product of claim 37, wherein the program code for creating the wireless short-range connection further comprises:

program code for sending a paging request message ~~to a coverage area within the mobile ad hoc communications network~~ directed to said at least one nearby device;
and
program code for receiving a paging accept message from said at least one nearby device.

42. (Original) The computer program product of claim 37, wherein the program code for confirming that said at least one nearby device includes the middleware layer further comprises:

program code for sending a recognition request message to said at least one nearby device; and
program code for receiving a recognition response message from said at least one nearby device,

43. (Original) The computer program product of claim 37, wherein the program code for executing the middleware layer to perform application and service discovery further comprises:

program code for receiving a notification message from said at least one nearby device, the notification message including a local application directory stored in said at least one nearby device;
program code for storing an update to a combined application directory, the update based on a comparison of the local application directory and the combined application directory; and
program code for sending an update message to said at least one nearby device, the update message including an update portion of the combined application directory for updating the local application directory stored in said at least one nearby device.

44. (Original) The computer program product of claim 43, wherein the program code for executing the middleware layer to perform application and service discovery further comprises:

program code for launching a local application based on a reference in the combined

application directory; and
program code for connecting the local application to a counterpart application
executing on said at least one nearby device.

45. (Currently Amended) Apparatus ~~A system for performing device detection and service
discovery in a mobile ad hoc communications network~~, comprising:

means for conducting an inquiry ~~of the mobile ad hoc communications network~~ to
discover at least one nearby device, ~~an inquiry including an indication that said at least one nearby
device may include a middleware layer, said middleware layer being middleware software for
providing application and service discovery;~~

means for creating a wireless short-range connection to said at least one nearby
device when the an inquiry request result includes the an indication that said at least one nearby
device may include the a middleware layer, the middleware layer comprising a middleware
software for providing application and service discovery;

means for confirming that said at least one nearby device includes the middleware
layer by requesting corresponding information from said at least one nearby device
via the wireless short-range connection when the inquiry includes the indication that
said at least one nearby device may include the middleware layer; and

means for executing the middleware layer to perform application and service
discovery when said at least one nearby device includes the middleware layer.

46. (Currently Amended I) The Apparatus ~~system~~ of claim 45, wherein the middleware layer
includes a service discovery protocol and at least one computer program, each computer program
comprising at least one sequence of operational instructions.

47. (Currently Amended I) The Apparatus ~~system~~ of claim 45, further comprising:
means for executing the middleware layer to launch applications and services when
said at least one nearby device includes the middleware layer.

48. (Currently Amended I) The Apparatus ~~system~~ of claim 45, wherein the means for

conducting the inquiry further comprises:

means for sending an inquiry request message ~~to a coverage area within the mobile ad hoc communications network~~; and
means for receiving an inquiry response message from said at least one nearby device, the inquiry response message including the indication.

49. (Currently Amended) The Apparatus system of claim 45, wherein the means for creating the wireless short-range connection further comprises:

means for sending a paging request message ~~to a coverage area within the mobile ad hoc communications network~~ directed to said at least one nearby device; and
means for receiving a paging accept message from said at least one nearby device.

50. (Currently Amended) The Apparatus system of claim 45, wherein the means for confirming that said at least one nearby device includes the middleware layer further comprises:

means for sending a recognition request message to said at least one nearby device;
and
means for receiving a recognition response message from said at least one nearby device,

51. (Currently Amended l) The Apparatus system of claim 45, wherein the means for executing the middleware layer to perform application and service discovery further comprises:

means for receiving a notification message from said at least one nearby device, the notification message including a local application directory stored in said at least one nearby device;
means for storing an update to a combined application directory, the update based on a comparison of the local application directory and the combined application directory; and
means for sending an update message to said at least one nearby device, the update message including an update portion of the combined application directory for updating the local application directory stored in said at least one nearby device.

52. (Currently Amended) The Apparatus system of claim 51, wherein the means for executing the middleware layer to perform application and service discovery further comprises:

means for launching a local application based on a reference in the combined application directory; and
means for connecting the local application to a counterpart application executing on said at least one nearby device.

53. (Currently Amended) A wireless device ~~in a mobile ad hoc communications network~~, comprising:

a wireless short range transceiver;
a memory device; and
a processor disposed in communication with the memory device, the processor configured to:
~~transmit with the transceiver a middleware inquiry of the mobile ad hoc communications network to discover at least one nearby device,~~
receive with the transceiver ~~a response to the~~ an inquiry request message ;
transmit with the transceiver an inquiry response message including an indication
that ~~said at least one nearby~~ the wireless device may includes a middleware layer, said middleware layer ~~being~~ comprising a middleware software for providing application and service discovery;
~~when the inquiry includes the indication that said at least one nearby device may includes the middleware layer:~~
create with the transceiver a wireless short-range connection to ~~said at least one nearby device~~ in response to receiving a paging request message from said at least one nearby device;
confirm whether said at least one nearby device includes the middleware layer by requesting corresponding information from said at least one nearby device via the wireless short-range connection ; and
when said at least one nearby device includes the middleware layer:

execute the middleware layer to perform application and service discovery.